DEPARTMENT OF VETERANS AFFAIRS
Medical Center
(Atlanta)
1670 Clairmont Road
Decatur GA 30033

July 7, 1995

In Reply Refer To: 508/153

.Mr. William Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

RE: **RM-8653** — In Support of the NII Band to Provide and Promote Access of Information and Services to Persons with Disabilities.

Dear Mr. Caton:

I am writing in support of the petition filed by Apple Computer, Inc. for an NII band for public use.

I am a Senior Biomedical Research Engineer working for the Atlanta VA Rehabilitation Research and Development Center (one of four major Department of Veterans Affairs Rehabilitation Research Centers in the country). The research charge for this center is the development of technology that promotes the quality of life of aging veterans. Many of these aging veterans have disabilities related to low vision and blindness, deafness and hearing losses, spinal cord injury and confinement to wheelchairs, and cognitive disabilities.

We are currently developing wearable computer technology for these veterans that provide them with access to control devices in their environment such as crosswalk push buttons, audio access to pedestrian cross walk signal displays (i.e., does the display indicate "Walk" or "Don't Walk"?), voice access to elevator push buttons and displays, control of handicapped van doors, lifts, etc., and automatic door openers, etc.

Engineers designing this wearable system here believe that the Apple proposal for public use of a 300 MHz-wide NII band would not only best serve the public interests, it would resolve many issues we face in the design of this wearable technology as they relate to issues of public access by persons with disabilities.

As an example, while the blind have the physical ability to go to any number of public buildings and use the facilities in terms of physical interaction, they lack the essential information for orientation, wayfinding, and interacting with on-site information systems (signs, etc.). Thus at present there is no viable method for providing fair access to facilities such as: transportation terminals, ATM machines, museums, libraries, parks, beaches, or even government buildings! Consequently, the issue of information access for a person who is blind is

foremost in a list of priority issues needing to be addressed by the rehabilitation research community.

Braille is used by less than 10% of persons who are legally blind, and is learned only rarely by older persons who have become legally blind late in life as a result of ocular deterioration over a period of many years. Braille labels, when used on controls, provide only initial information, giving no indication of the result of pushing certain buttons, how a visual display may have changed, or of the nature of any errors that may have occurred. Thus Braille is insufficient for many interactive tasks, such as using an ATM machine.

The NII band provides an opportunity for the development of low cost adaptive technologies that can provide safe, secure, and equal access to essential aspects of American life.

Many of these problems have been studied, and a report of current priorities was printed in the Federal Register (November 18, 1994, pages 59857-59860) as a result of a report of the Technology Research Group stemming from a NIDRR Project Director's Meeting. The following is a list of some of these priorities and how the availability of the proposed NII Band would provide a means of addressing these issues.

Priority: "Develop technology and methods, including map reading, for orientation and mobility in large open areas such as transportation facilities, crossroads, shopping malls, parks, and areas of public assembly and display" [p. 59858].

The layout of streets, buildings and transport plazas could be made accessible through an NII band city-wide network. In combination with GPS or a similar system (perhaps the NII network itself could offer position information to the user) this would be an invaluable aid to the blind traveler.

Priority: "Develop technology and methods for improving access to visual displays, including flat panel displays found...in the community...that provide access to information, automatic teller machines," etc.

Access to public information now provided only on kiosks at malls and other public sites for dispersal of government information about programs, events, hearings, etc. This information is largely inaccessible to persons with visual disabilities because of its visual format, and inconvenient to persons who have difficulty traveling to (and around) malls. However, this information could be obtained easily through an NII city-wide network and presented to the disabled person in an optimal fashion via a wearable device designed toward this purpose.

Also, as mentioned above, access to ATM's can also be provided via NII through secure spread-spectrum transmissions and the use of a specialized wearable device.

Priority: "Develop technology and methods for improving access by persons with low vision or blindness to electronic information systems." [p. 59858]

With the implementation of the NII band and the use of a wearable device developed to meet the specific needs of the disabled person, access to electronic information could become very transparent and accessible from any location within the city. The mobility of the person and their physical capabilities would no longer be an issue.

Priority: "Address artificial vision, image recognition, and vocalization. Emphasize technologies for low vision; ... emphasize natural speech to access products...and electronic information systems." [p. 59859]

The NII band would give disabled persons using specially designed wearable devices access to high-speed data processing. This high-speed access to another computer can increase the processing power available to the disabled person tremendously. With the availability of a high-speed computer, wearables could be designed with a small video camera that would relay live video images to a remote computer capable of "reading" signs, recognizing objects in the environment and even recognizing person's faces, and then relaying this information back to the disabled person in real time, enabling the person to respond appropriately to changing environments and situations. Work in progress at the MIT Media Laboratory has already shown the viability of such a system. Also, given the availability of a high speed computer over the NII band, very natural speech interactions between the disabled persons and other systems could be implemented in real time. A disabled person in trouble could then access emergency help services from any location through normal voice interaction with the network.

Priority: "...address the needs of persons with cognitive disabilities when it develops technology to maintain access to new products with advancing technology..." [p. 59859]

One type of personal agent technology being developed at the MIT Media Laboratory (as well as VA research in this area) toward the development of interactive agent technology for persons with cognitive disabilities could also be implemented on high-speed computers and linked to the disabled person via NII band communications. An "intelligent agent" can learn the disabled persons needs and cognitive capabilities and translate interactions with network systems, information systems and even other individuals into words and phrases that can be understood and responded to easily by persons with cognitive disabilities.

In short, the researchers here at the Atlanta VA Rehabilitation Research and Development Center see a bright future for disabled veterans with the advent of the NII band when made available as a city-wide public access network like that envisioned in the Apple NII petition.

Other proposed uses of this frequency band now before the FCC may grossly limit access to information. They may ultimately provide such information, but not necessarily when, or where it is needed, and perhaps not at a cost easily afforded by aging veterans. A system such as the NII band proposed by Apple provides incentives for merchant participation through a community network, and government participation through the American's with Disabilities Act, and Section 504 of the Vocational Rehabilitation Act.

With the NII petition, the FCC has the opportunity, in a single decision, to provide for low cost electronic "curb cuts" (so to speak) in access to the "Information Superhighway," as well as access to local and regional government information postings, and the ability to interact with equity in business and community affairs.

I hope this information serves you in making a knowledgeable decision in this matter.

Respectfully Yours,

David A. Ross

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